

# NATF Redacted Operating Experience Report

## Human Performance Leads to Accidental Tripping of Breakers

### [About NATF Redacted Operating Experience \(OE\) Reports](#)

North American Transmission Forum (NATF) operating experience reports highlight positive or negative transmission (reliability or resiliency) experiences worth sharing for learning opportunities or potential trending. The overall goal is to help each other learn without experiencing the same issues first-hand. This sharing originates confidentially within the NATF membership.

Redacted operating experience reports are posted on the NATF public website to allow the NATF and its members to more broadly share information, especially safety-related alerts and learnings, with contractors and other utilities to benefit the industry at large.

The NATF member company that submitted the initial restricted distribution OE report for this topic/event has approved the NATF to issue this redacted OE report.

### **Open Distribution**

Copyright © 2018 North American Transmission Forum. Not for sale or commercial use. All rights reserved.

### **Disclaimer**

This document was created by the North American Transmission Forum (NATF) to facilitate industry work to improve reliability and resiliency. The NATF reserves the right to make changes to the information contained herein without notice. No liability is assumed for any damages arising directly or indirectly by their use or application. The information provided in this document is provided on an “as is” basis. “North American Transmission Forum” and its associated logo are trademarks of NATF. Other product and brand names may be trademarks of their respective owners. This legend should not be removed from the document.

## Topic

Human Performance Leads to Accidental Tripping of Breakers

## Description

Three Bulk Electric System (BES) breakers tripped open, resulting in the isolation of a BES bus and transformer, T1, from the system. During the investigation it was found that the contractor at the site was performing drilling work with a jig saw on panel 8, which houses T1 protection. As a result of the vibration, the 94 (auxiliary) relay on T1 operated and tripped the three BES breakers.

## Lessons Learned

1. A hazard assessment had been conducted that identified vibration as a hazard for the relays installed in panel 8 prior to cutting with a jig saw. However, the mitigation put in place prior to work did not prevent relays from operation. This mitigation was to conduct cutting activities in a manner to reduce vibration.
2. The worker assigned to the task did not have previous experience on this type of work (on in-service panels) and was not a P&C technician. The task should have been assigned to an experienced technician given the hazards associated with vibration.
3. The consideration to take a protection outage was made prior to the work. However, the transformer protection design follows an old standard, which does not include a redundant protection. A transformer outage should have been then considered, which did not occur. Note that the transformer outage requires the load to be transferred via distribution system as there is not a second transformer at this site.

## Actions Taken

- A new bulletin was issued stating that cutting holes, drilling, etc. in operational protection panels is prohibited. Alternate methods shall be used that do not involve cutting or drilling in panels containing operational protections, such as taking protection outages or reusing existing cutouts.
- The upgrade on transformer protection to redundant schemes (based on our up-to-date standard) was initiated. The transformer is currently protected by one set of 50/51 (CO8) relays and there is no redundant protection to provide the opportunity for protection outages. Our new protection standard requires fully redundant protection scheme, which provides many benefits including the ability to disable one scheme for maintenance work.

## Extent of Condition

N/A